



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/840,029	04/24/2001	Laurence W. Hedlund	1579-561	4264
23117	7590	07/22/2004		
NIXON & VANDERHYE, PC 1100 N GLEBE ROAD 8TH FLOOR ARLINGTON, VA 22201-4714				
			EXAMINER ROBINSON, DANIEL LEON	
			ART UNIT 3742	PAPER NUMBER

DATE MAILED: 07/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/840,029

**Applicant(s)**

HEDLUND ET AL.

**Examiner**

Daniel I. Robinson

**Art Unit**

3742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) 6-36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 is/are rejected.
- 7) ☒ Claim(s) 2-5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

Art Unit: 3742

*Election/Restrictions*

Applicant's election with traverse of Group I, claims 1-5, in the reply filed on 4-7-2004 is acknowledged. The traversal is on the ground(s) that at least each of claims 1, 7 and 15 of Groups 1, 11 and 111, respectively, language is present which unequivocally defines the derivation or generation of a signal in response to optically detected movements indicative of a cardiac phase (e.g., cardiac inactivity and activity).

This is not found persuasive because the method claims cited are directed to different inventions i.e. a method of cardiac phase detection or a method of mri microscopy, the method claims cannot be used together since they are different functions. If the method claims are considered combinations they must claim the particulars of any subcombination this is not the case as claim 15 recites an optical fiber not found in the other independent claims and claim 6 recites a derived cardiac signal not found in claim 15 also claim 6 does not recite a derived signal (other than that found in line 6 that lacks antecedent basis).

The requirement is still deemed proper and is therefore made FINAL.

Newly submitted claims 31-36 directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Newly submitted independent claim 31 recites "optically detecting internal anatomic physical movement" not found in elected claim 1.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution

Art Unit: 3742

on the merits. Accordingly, claims 31-36 withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by Negus et al. (U.S. Pat. 6,595,987). Negus discloses a heart synchronized pulsed laser system that shows optical detection of cardiac movement and the generation of a trigger signal indicative of the cardiac phase.

***Allowable Subject Matter***

Claims 2-5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Art Unit: 3742

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Foltz, Turcott, Richards, Riederer, Johnson, Blakeley and Sontag are cited to show structure similar to the claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel I. Robinson whose telephone number is 703 306-9043. The examiner can normally be reached on M-F 5:30am-2:30pm.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dlr

DANIEL ROBINSON  
PATENT EXAMINER

A handwritten signature in black ink, appearing to read 'dlr', is written over the printed name and title of the examiner.

Art Unit: 3742

Applicant's election with traverse of all claims 1-30 in Paper No. 6 is acknowledged. The traversal is on the ground(s) that the restriction was in error. This is found persuasive.

***Election/Restrictions***

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-5, drawn to a method for detecting a phase in a cardiac cycle, classified in class 250, subclass 336.1.
- II. Claims 6-14, drawn to a method of MRI microscopy, classified in class 600, subclass 407.
- III. Claims 15-17, drawn to a MRI microscopy method, classified in class 600, subclass 413.
- IV. Claims 18-20, drawn to a gating system, classified in class 250, subclass 340.
- V. Claims 21-25, drawn to an MRI system, classified in class 600, subclass 407.
- VI. Claims 26-30, drawn to an MRI system, classified in class 600, subclass 413.

The inventions are distinct, each from the other because of the following reasons:

Inventions both Groups (V and VI) and Group IV are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the

31-38

Method of conducting MRI Microscopy  
USL, MR microscopy Unit  
microscopy diffraction, reflection-refraction

Art Unit: 3742

particulars of the subcombination as claimed because the combinations do not claim a signal processor. The subcombination has separate utility such as a gating system.

Inventions both Groups (II and III) and Group I are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the combinations do not claim a derivation of a cardiac signal  $I_h$  response to optically detected movements indicative of a cardiac phase. The subcombination has separate utility such as a method of detecting a cardiac phase.

Inventions Groups IV-VI and Groups I-III are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatuses can practice another and materially different process such as one with or without optical cardiac phase detection. The processes can be practiced with a materially different apparatus such as one with or without a signal processor.

Art Unit: 3742

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

A telephone call was made to Bryan Davidson on 3-10-2004 to request an oral election to the above restriction requirement, but did not result in an election being made.

Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel I. Robinson whose telephone number is 703 306-9043. The examiner can normally be reached on M-F 5:30am-2:30pm.

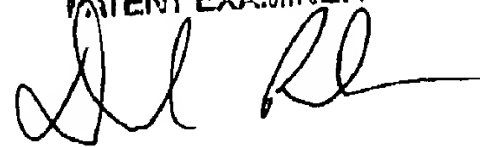
The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



Art Unit: 3742

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**DANIEL ROBINSON**  
**PATENT EXAMINER**

A handwritten signature in black ink, appearing to read 'DR', is written over the printed name and title of the patent examiner.

dlr